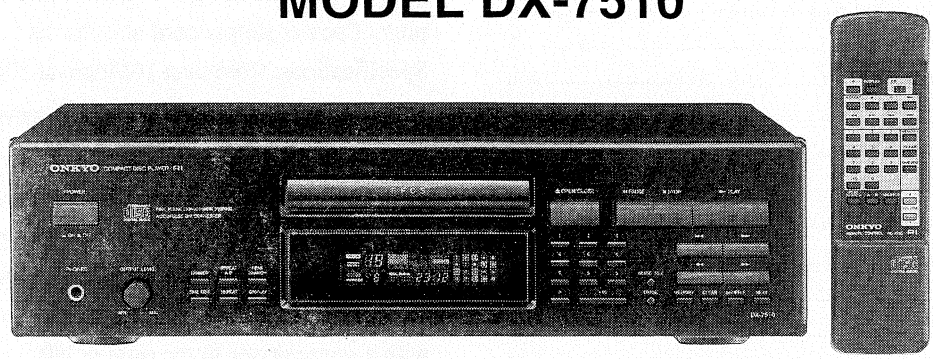
Ref.No. 3493

ONKYO® SERVICE MANUAL

COMPACT DISC PLAYER
MODEL DX-7510



Black model

BMP	230V AC, 50Hz
BMW	120/220V AC, 50/60Hz

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PARTS NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

SPECIFICATIONS

Signal readout system:	Optical non-contact
Reading rotation:	About 500 – 200 r.p.m. (constant linear velocity)
Linear velocity:	1.2 –1.4 m/s
Error correction system:	Cross Interleave Reed Solomon code
D/A converter:	1 bit PWM ACCUPULSE D/A CONVERTER
Sampling frequency:	352.8 kHz (Eight-times oversampling)
Number of channels:	2 (stereo)
Frequency response:	5 Hz – 20 kHz
Total harmonic distortion:	0.004% (at 1 kHz)
Dynamic range:	96 dB
Signal to noise ratio:	100 dB
Channel separation:	90 dB (at 1 kHz)
Wow and Flutter:	Below threshold of measurability
Output level:	2 volts r.m.s.
Power consumption:	11 watts
Dimensions (W × H × D):	455 × 120 × 308 mm
Weight:	5.1 kg, 11.2 lbs.

Specifications and external appearance are subject to change without notice because of product improvements.

ONKYO
AUDIO COMPONENTS

TABLE OF CONTENTS

Specifications..... 1
Service procedures..... 2
Caution on replacement of optical pickup..... 2
Protection of eyes from laser beam during servicing..... 3
Laser warning labels..... 3
Exploded view..... 4
Parts list..... 5
Mechanism-exploded view..... 6
Removement of tray ass'y..... 7
Microprocessor connection diagram..... 8
Microprocessor terminal description..... 9
IC block diagrams and descriptions..... 10
Disassembling procedures..... 15
Block diagram..... 16
Adjustment procedures..... 17
Printed circuit board view from bottom side..... 19
Schematic diagram..... 21
Printed circuit board-parts list..... 23
Schematic diagram mechanism block..... 25
Packing view..... 26

SERVICE PROCEDURES

1. Safety-check out

After correcting the original service problem,perform the following safety check before releasing the set to the customer:

Connect the insulating-resistance tester between the plug of power supply cord and chassis.

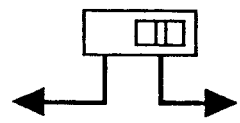
Specifications:More than 10Mohm at 500V.

2. Voltage Selector (Back panel)

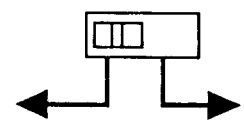
Worldwide models are equipped with a voltage selector to conform with local power supplies.Be sure to set this switch to match the voltage of the power supply in user's area before turning the power switch on.

Voltage is changed by sliding the groove in the switch with a screw driver to the right or left.

Confirm that the switch has been moved all the way to the right or left before turning the power switch on.



at AC120V



at AC220V

CAUTION ON REPLACEMENT OF OPTICAL PICKUP

The laser diode in the optical pickup block is so sensitive to static electricity,surge current and etc, that the components are liable to be broken down or its reliability remarkably deteriorated.

During repair,carefulley take the following precautions. (The following precautions are included in the service parts.)

PRECAUTIONS

1.Ground for the work-desk.
Place a conductive sheet such as a sheet of copper (with inpedance lower than 10MΩ) on the work-desk and place the set on the conductive sheet so that the chassis.

2.Grounding for the test equipment and tools.
Test equipments and toolings should be grounded in order that their ground level is the same the ground of the power source.

3.Grounding for the human body.
Be sure to put on a wrist-strap for grounding whose other end is grounded.
Be particularly careful when the workers wear synthetic fiber clothes, or air is dry.

4.Select a soldering iron that permits no leakage and have the tip of the iron well-grounded.

5.Do not check the laser diode terminals with the probe of a circuit tester or oscilloscope.

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs a laser. Therefore, be sure to follow carefully the instructions below when servicing.

WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMMISION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

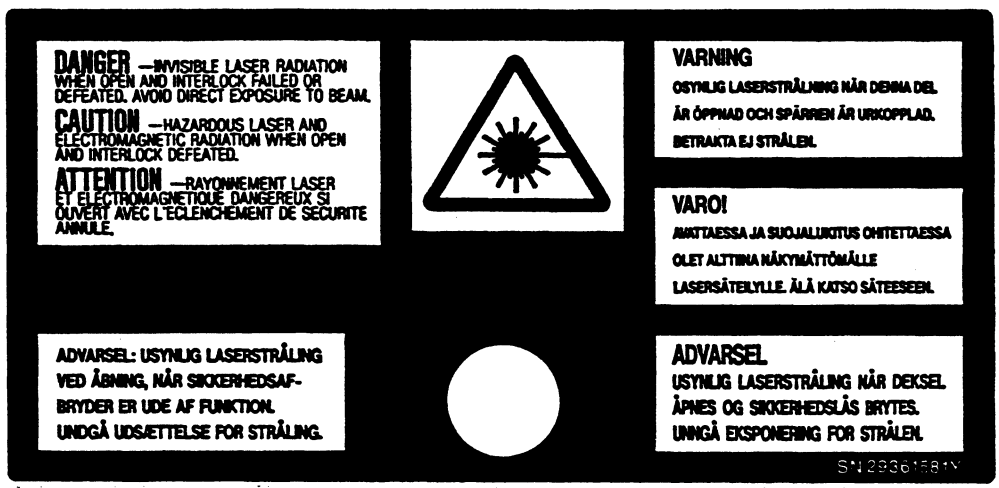
Laser Diode Properties

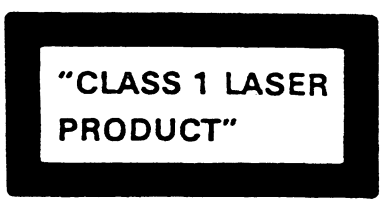
- Material: GaAlAs
- Wavelength: 760~800nm
- Emission Duration: continuous
- Laser output: max. 0.5mW*

  *This output is the value measured at a distance about 1.8mm from the objective lens surface on the Optical Pick-up Block.

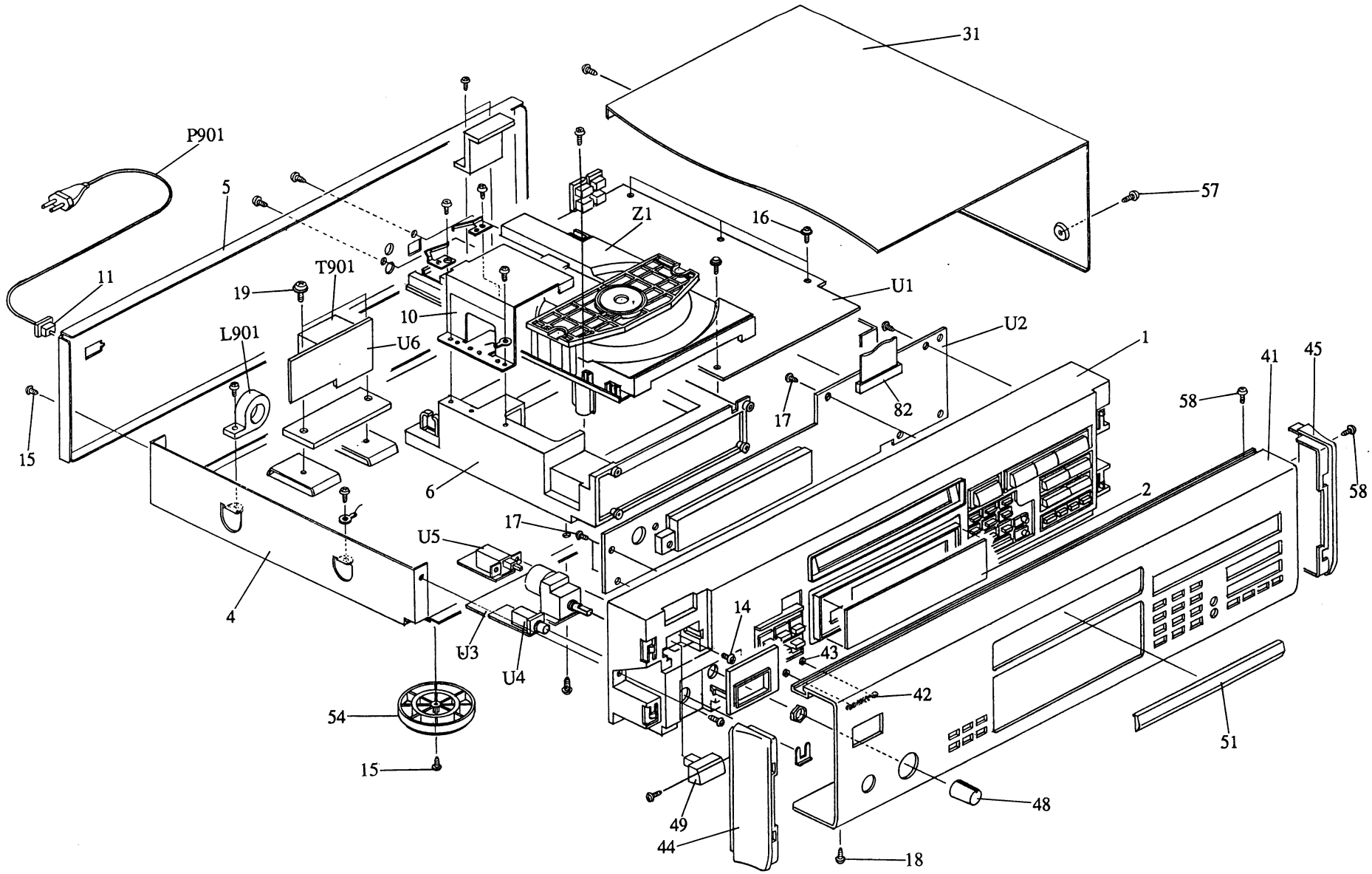
LASER WARNING LABELS

The label shown below are affixed.


DANGER —INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCK FAILED OR DEFEATED. AVOID DIRECT EXPOSURE TO BEAM.
CAUTION —HAZARDOUS LASER AND ELECTROMAGNETIC RADIATION WHEN OPEN AND INTERLOCK DEFEATED.
ATTENTION —RAYONNEMENT LASER ET ELECTROMAGNETIQUE DANGEREUX SI OUVERT AVEC L'ECLENCHEMENT DE SECURITE ANNULE.
VARNING
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.
VARO!
AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
ADVARSEL: USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAF-BRYDER ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.
ADVARSEL
USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES OG SIKKERHEDSLÅS BRYTES. UNNGÅ EKSPONERING FOR STRÅLEN.



EXPLODED VIEW



PARTS LIST

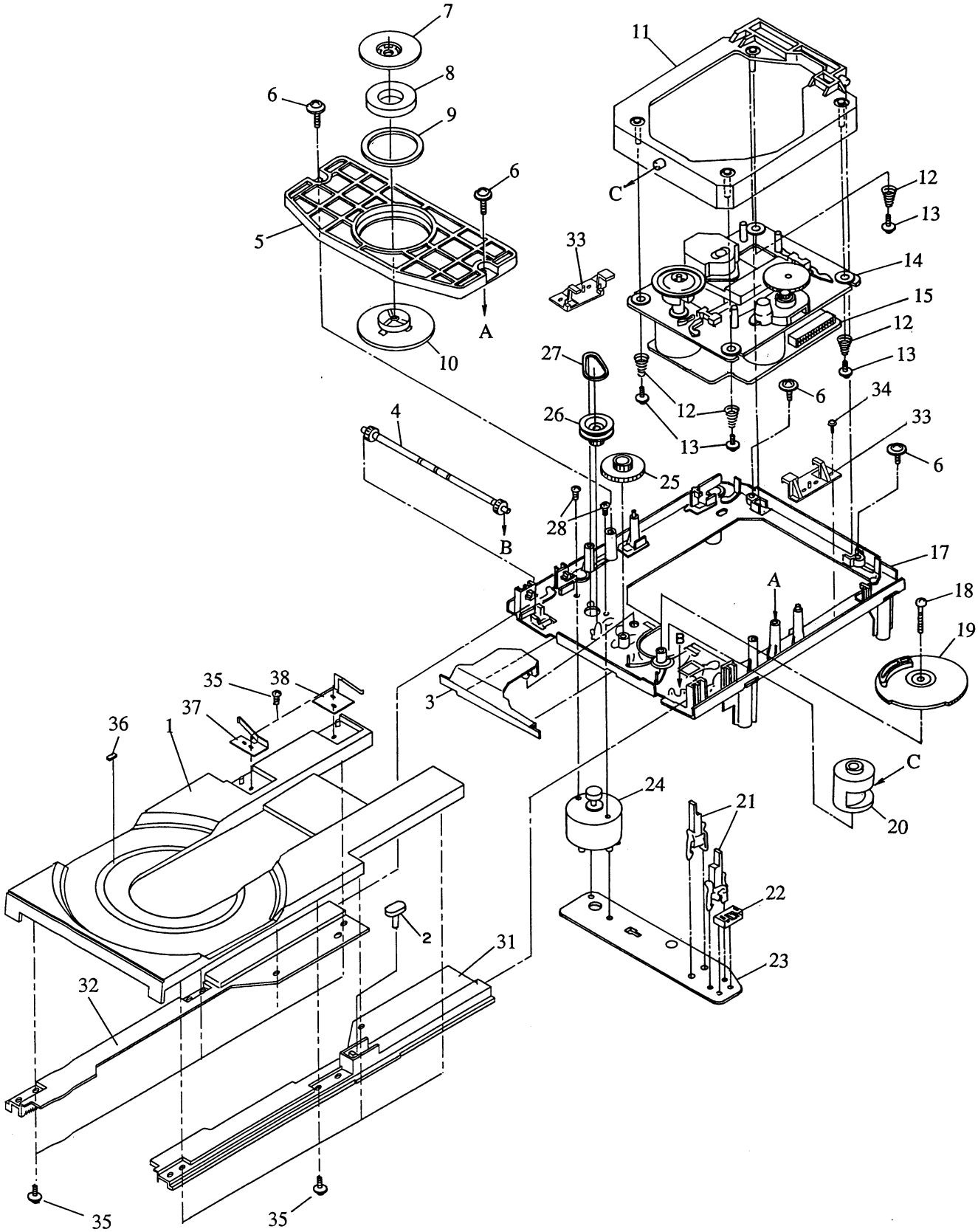
REF.NO.	PART NO.	DESCRIPTION
1	27110776AY	Front bracket ass'y
2	28191662Y	Clear plate
3	27100227DY	Chassis
5	27122014Y	Rear panel <P>
	27122015Y	Rear panel <W>
	27122080Y	Rear panel <GK>
6	27190928AY	Holder M
10	27141618Y	Retainer M
11	27300750	⚠Bushing
12	27255004	CS-1U,Clamp
13	27301396	HL-28D,Clamp
14	82143006	3P+6FN(BC),Pan head screw
15	834430088	3TTS+8B(BC),Self-tapping screw
16	831130088	3TTW+8B,Self-tapping screw
17	833430080	3TTP+8P(BC),Self-tapping screw
18	831430100	3TTW+10P(BC),Self-tapping screw
19	830440109	4TTC+10C(BC),Self-tapping screw
20	834430108	3TTS+10B(BC),Self-tapping screw
31	28184479AY	Top cover
32	28140680	0.5 × 8 × 180,Cushion
41	27211670AY	Front panel
42	28135199Y	Badge
43	8910301	Ring CS
44	28125248-6Y	End cap L
45	28125249-6Y	End cap R
48	28324845BY	Knob,level
49	28324140Y	Knob,power
510	27267830Y	Guide,power
51	28148303	Door
54	27175292Y	Leg ass'y

REF.NO.	PART NO.	DESCRIPTION
71	29361581Y	Label,ALL
72	29360687	Label,CLASS1
73	29361786Y	Label <W>
74	29361870	Label,KS <GK>
82	2047371512	NCFC7-371512,Flexible flat cable
83	2047221012	NCFC7-221012,Flexible flat cable
L901	230915	⚠RBD25HA-00,Core
P901	253175 or	⚠AS-CEE,
	253164	⚠Power supply cord
T901	2300776Y	⚠NPT-1138P,Power transformer <P>
	2300777Y	⚠NPT-1138DG,Power transformer <W>
U1	1H226502-1A	NAAR-4802-1A,Main circuit pc board ass'y
U2	1H226503-1	NADIS-4803-1,Display circuit pc board ass'y
U3	1H226504-1	NAAF-4804-1,Headphone amplifier pc board ass'y
U4	1H226505-1	NAAF-4805-1,Headphone terminal pc board ass'y
U5	1H226506-1	NAPS-4806-1,Power switch pc board ass'y <P>
	1H226506-1A	NAPS-4806-1A,Power switch pc board ass'y <W>
U6	1H226507-1	NAPS-4807-1,Power transformer pc board ass'y
U7	1H226508-1	NASW-4808-1,Voltage selector switch <W> pc board ass'y <W>
Z1		NCD-131S,CD mechanism ass'y

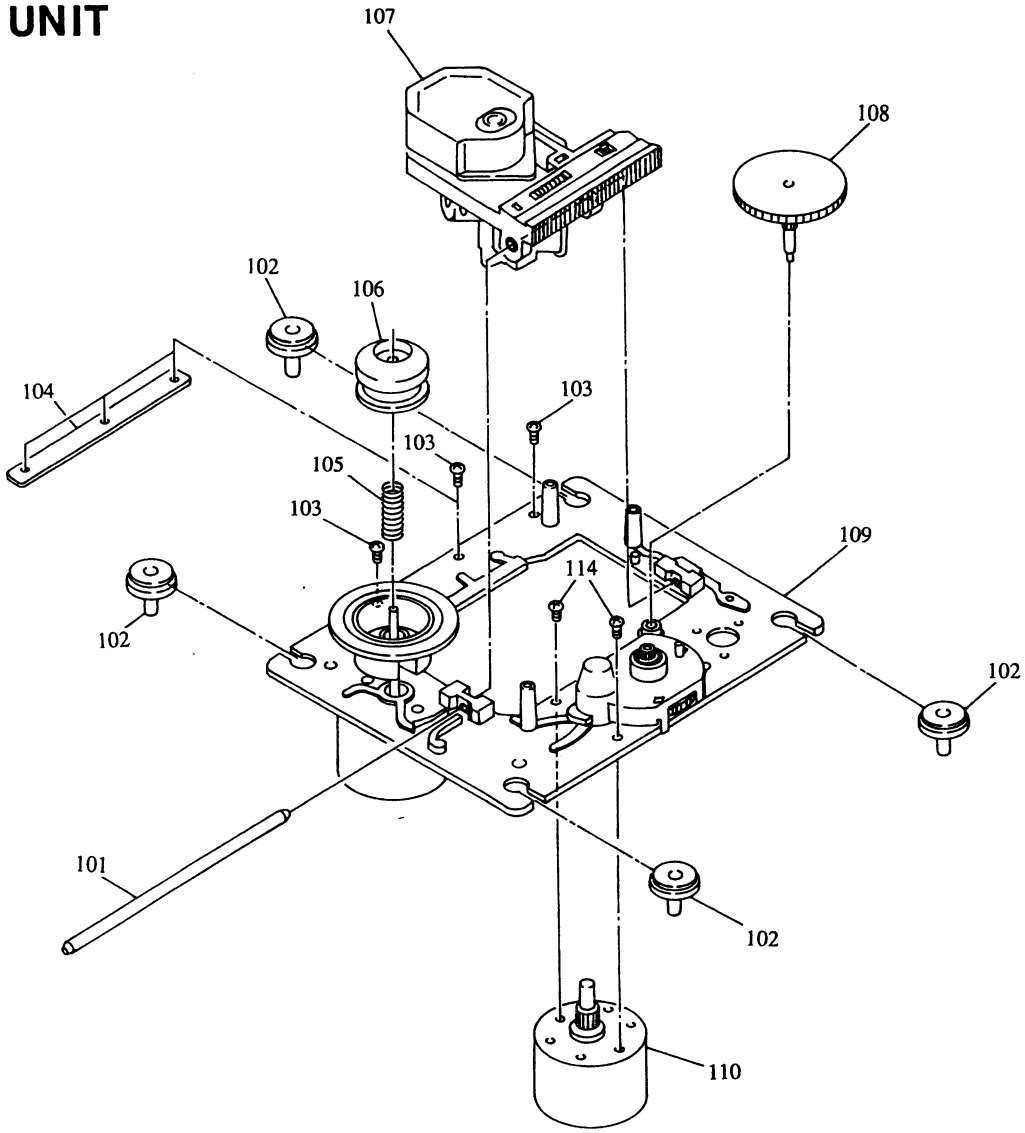
NOTE: <P>:230V model only
<W>:Worldwide model only

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

MECHANISM-EXPLODED VIEW



DRIVE UNIT



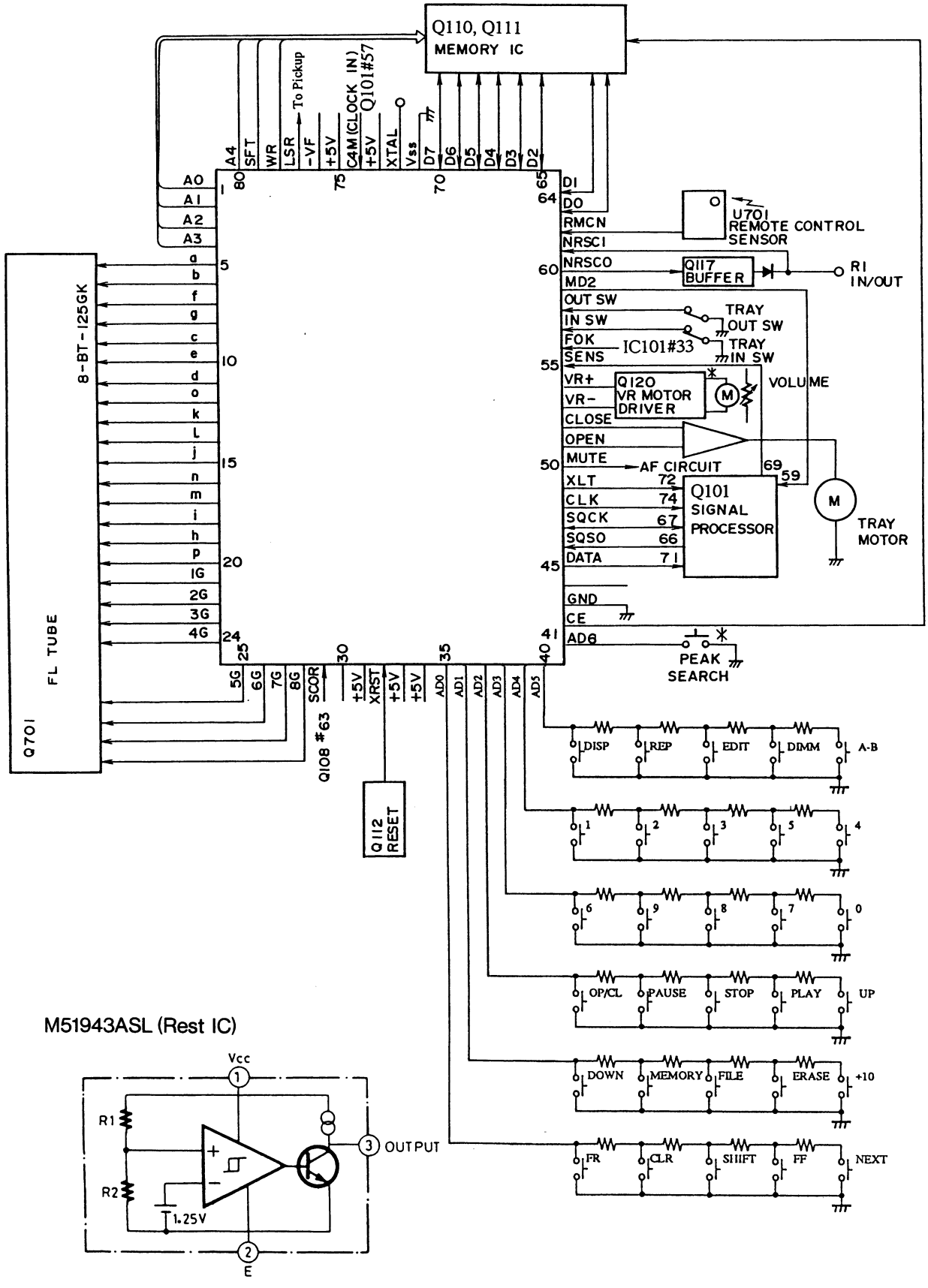
PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
1	24840053	Tray
2		Stopper
3	24822014	Gear cover
4	24810020	Tray gear
5	24840061	Chucking plate
6		2.6TTW+7B,Self-tapping screw
7	24830003	Chucking yoke
8	24832004	Magnet
9	24836013	Damper
10	24810024	Chucking plate
11	24802012	Sub-chassis
12	24820023	Spring
13	24840062	Screw with washer
14		KSM-2401,Pickup drive unit
15	24840075	CD servo pcb ass'y
17	24802013	Main chassis
18		2.6TTW+16B,Self-tapping screw
19	24810021	Drive gear
20	24840063	Control cam
21	24840064	Leafswitch
22	25055369	NPLG-5P352,Plug
23	24840066	Loading motor pc board
24	24840067	Loading motor

REF.NO.	PART NO.	DESCRIPTION
25	24810022	Middle gear
26	24810025	Loading plate
27	24816008	Belt
28		2.6B+2.5F,Binding screw
31	24840055A	Rack R
32	24840054B	Rack L
33	24840056A	Holder
34	833130087	3TTP+8S,Self-tapping screw
35	834426068	2.6TTS+6B(BC),Self-tapping screw
36	24836013-1Y	Cushion
37	24820021Y	Spring F
38	24820022Y	Spring R
101	24828006	Sled shaft S
102	24836014	Insulator S
103	24840068	2×5,Special screw
104	24822015	Plate S
105	24820024	Spring
106	24824003	Center ring
107	24110011	KSS-240A,Optical pickup
108	24810023	Wheel
109	24802014	Chassis
110	24804012	Motor gear
114	82112003	2P+3FN,Pan head screw

MICROPROCESSOR CONNECTION DIAGRAM

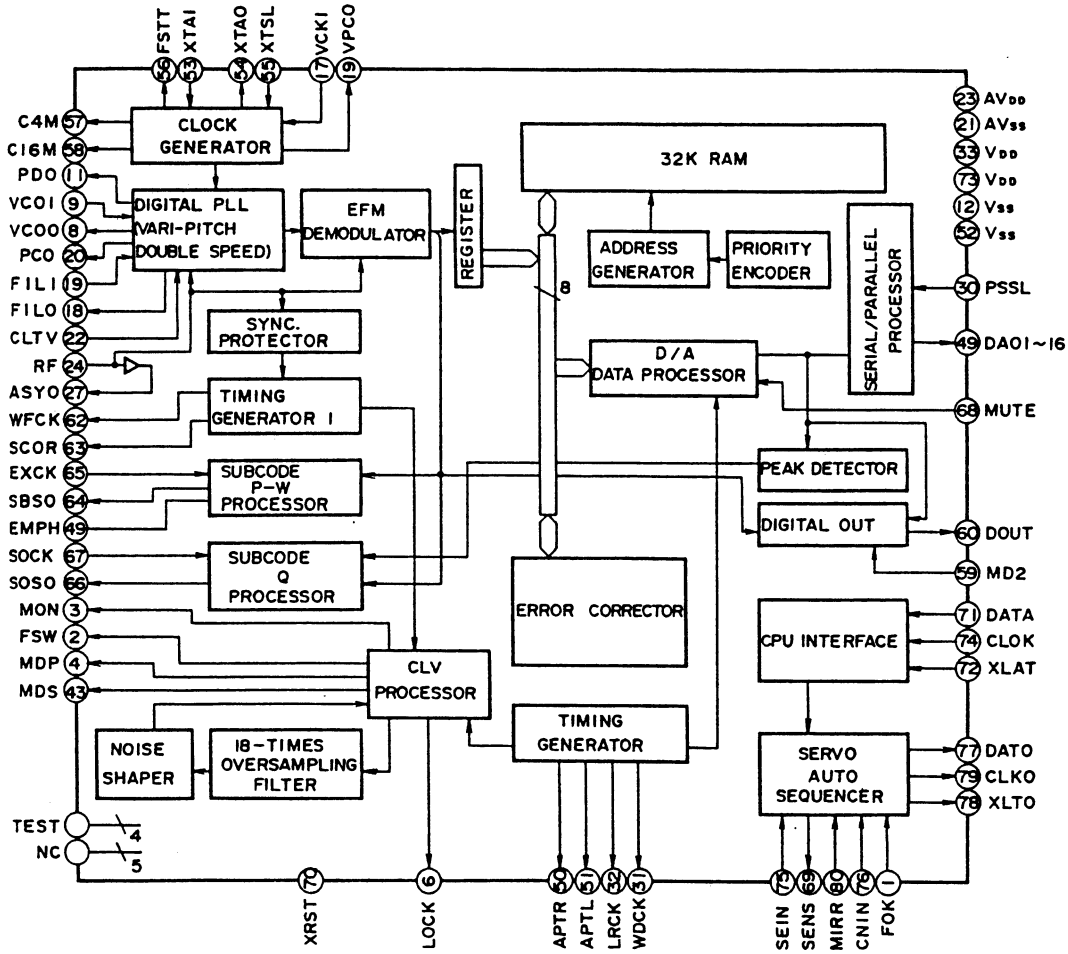
CXP50116-527 (Microprocessor)



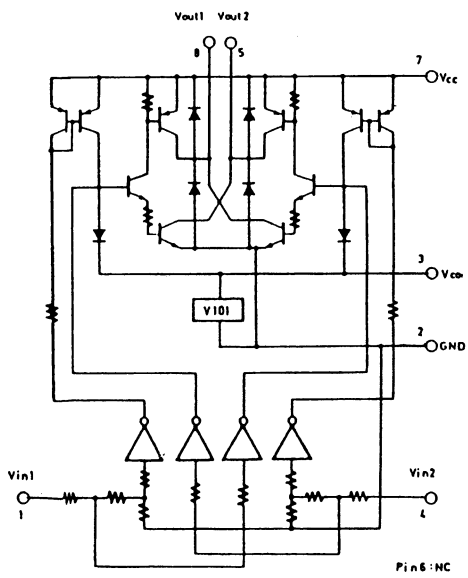
M51943ASL (Rest IC)

Pin No.	Symbol	Description
1～4	A0～A3	Music file address signal.
5～20	a～p	Fluorescent indicator tube segment drive output terminals.
21～28	1G～8G	Fluorescent indicator tube grid drive output terminals.
29	SCOR	Synchronizing signal detection input terminal of sub code frame.
31	5V	
32	XRST	Reset input terminal.Reset at the low level.
33,34	5V	
35～41	AD0～AD6	AD input terminal.Connect to the operation key.
42	CE	Chip enable terminal.
43	GND	
45	DATA	Serial data output terminal.
46	SQSO	Subcode Q input terminal.
47	SQCK	Subocde Q read clock input/output terminal.
48	CLK	Serial data transmission clock output terminal.
49	XLT	Command execution output terminal.
50	MUTE	Muting ON/OFF control output terminal.ON at the high level.
51	OPEN	Tray open control output terminal.Open at the low level.
52	CLOSE	Tray close control output terminal.Close at the low level.
53	VR-	Volume control output.
54	VR+	Volume control output.
55	SENS	Interface of signal processor and microprocessor ICs.
56	FOK	Focus OK input terminal.Focus OK at the high level.
57	INSW	Tray close detection input terminal.
58	OUTSW	Tray open detection input terminal.
59	MD2	Digital output control output.
60	NRSCO	Remote control signal (RI signal) output terminal.
61	NRSCI	Remote control signal (RI signal) input terminal.
62	RMCN	Remote control signal input terminal.
63～70	D0～D7	Music file data signal.
71	Vss	Ground terminal.
72	XTAL	Clock output terminal.
73	5V	
74	C4M	System clock input terminal.
75	5V	
76	VF	Negative power supply terminal for fluorescent indicator tube.
77	LSR	Optical pickup control output terminal.On at the low level.
78	WR	Music file read/write control signal.
79	SFT	Music file shift signal. Control the serial data at the rise pulse.
80	A4	Music file address signal.

CXD2500AQ (Digital Signal Processor)



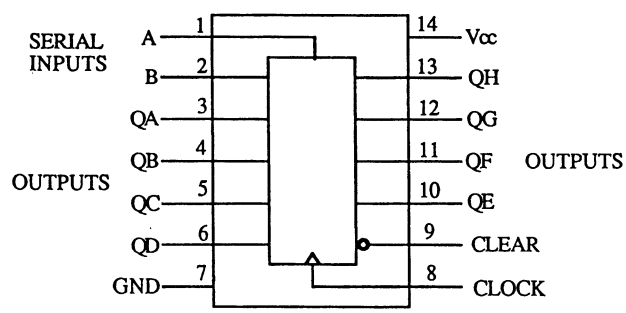
LB1639 (Volume Motor Drive)



74HC164(8-bits Serial/Parallel Output Shift Register)

TRUTH TABLE

Inputs				Outputs			
Clear	Clock	A	B	QA	QB	.....	QH
L	×	×	×	L	L		L
H	L	×	×	QAO	QBO		QHO
H	↑	H	H	H	QAn		QGn
H	↑	L	×	L	QAn		QGn
H	↑	×	L	L	QAn		QGn



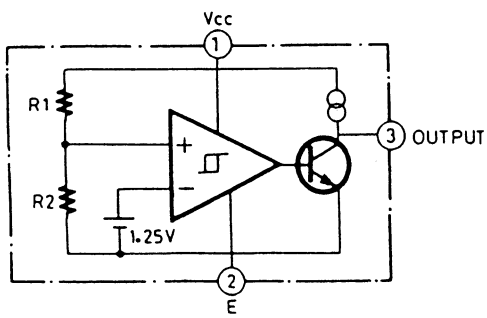
NO.	SYMBOL	I/O	DESCRIPTION
1	FOK	I	Foucs Ok input
2	FSW	O	Output filter changeover output for spindle motor
3	MON	O	Spindle motor control output
4	MDP	O	Spindle motor servo control
5	MDS	O	Spindle motor servo control
6	LOCK	O	H when GFS is the high level
7	NC		
8	VCOO	O	Oscillation circuit output for analog EFM PLL.
9	VCOI	I	Oscillation circuit input for analog EFM PLL. (8.6436MHz)
10	TEST	I	Test terminal
11	PDO	O	Charge pump output analog EFM PLL
12	Vss		Ground terminal
13-15	NC		
16	VPCO	O	PLL charge pump output for variable pitch
17	VCKI	I	Clock input for variable pitch from VCO (16.934MHz)
18	FILO	O	Filter output for master PLL.
19	FILI	I	Filter input for master PLL.
20	PCO	O	Charge pump output of master PLL
21	AVss		Analog ground
22	CLTV	I	VCO control voltage input for master
23	AVDD		Analog section power supply (+5V)
24	RF	I	EFM signal input
25	BIAS	I	Asymmetry circuit constant current input
26	ASYI	I	Asymmetry comparator voltage input
27	ASYO	O	EFM full swing output
28	ASYE	I	Asymmetry control circuit
29	NC		
30	PSSL	O	Audio data output mode changeover input Serial data at L and paraller data at H.
31	WDCK	I	D/A interface for 48 bits slot. Word clock f=2Fs.
32	LRCK	I	D/A interface for 48 bits slot. LR clock f=Fs.
33	VDD		Power supply terminal (+5V)
34-49			Data output terminals

			PSSL=1	PSSL=0
34	DA16	O	DA16	Serial data of 48 bits slot
35	DA15	O	DA15	Bit clock of 48 bits slot
36	DA14	O	DA14	Serial data of 64 bits slot
37	DA13	O	DA13	Bit clock of 68 bits slot
38	DA12	O	DA12	LR clock of 68 bits slot
39	DA11	O	DA11	GTOP output
40	DA10	O	DA10	XUGF output
41	DA09	O	DA09	XPLCK output

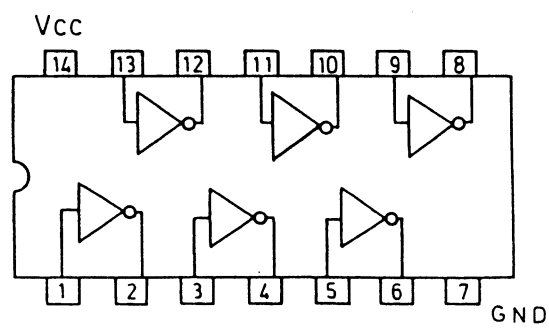
NO.	SYMBOL	I/O	DESCRIPTION	
42	DA08	O	DA08	GFS output
43	DA07	O	DA07	RFCK output
44	DA06	O	DA06	C2P0 output
45	DA05	O	DA05	XRAOF output
46	DA04	O	DA04	MNT 3 output
47	DA03	O	DA03	MNT 2 output
48	DA02	O	DA02	MNT 1 output
49	DA01	O	DA01	MNT 0 output
50	APTR	O	Control output for aperture correction. H when R ch.	
51	APTL	O	Control output for aperture correction. H when L ch.	
52	Vss		Ground terminal	
53	XTAI	I	Crystal oscillation circuit input of 16.9344MHz or 33.8688MHz input.	
54	XTAO	O	Crystal oscillation circuit output of 16.9344MHz.	
55	XTSL	I	Crystal selection input terminal. L when 16.9344MHz. H when 33.8688MHz.	
56	FSTT	O	2/3 divided output of pins 53 and 54.	
57	C4M	O	4.2336 MHz output	
58	C16M	O	16.9344 MHz output	
59	MD2	I	Digital output control input. On at high level.	
60	DOUT	O	Digital output	
61	EMPH	O	Emphasis control output. Active high.	
62	WFCK	O	Write frame clock output	
63	SCOR	O	Sub-code detection output. H when is detected SO or SI.	
64	SBSO	O	Serial output of sub-code (P~W)	
65	EXCK	I	Clock input for read out SQSO.	
66	SQSO	O	Sub Q 80 bits, PCM peak, and level data 16 bits output.	
67	SQCK	I	Clock input for read out SQSO	
68	MUTE	O	Muting control output. Active H.	
69	SENS		Sens output. Output to the microprocessor	
70	XRST	I	System reset. Reset at the low level.	
71	DATA	I	Serial data input from the microprocessor.	
72	XLTA	I	Latch input from the microprocessor. Latch the serial data at the trailing.	
73	VDD		Power supply treminal	
74	CLOK	I	Serial data transfer clock input from microprocessor	
75	SEIN	I	Sens input from SSP	
76	CNCI	I	Track jump numbers count signal input	
77	DATO	O	Serial data output to SSP	
78	XLTO	O	Serial data latch output to SSP. Latch at trailing.	
79	CLKO	O	Serial data transfer clock output to SSP.	
80	MIRR	I	Mirror signal input	

Note: SSP: IC101 CXA1372Q

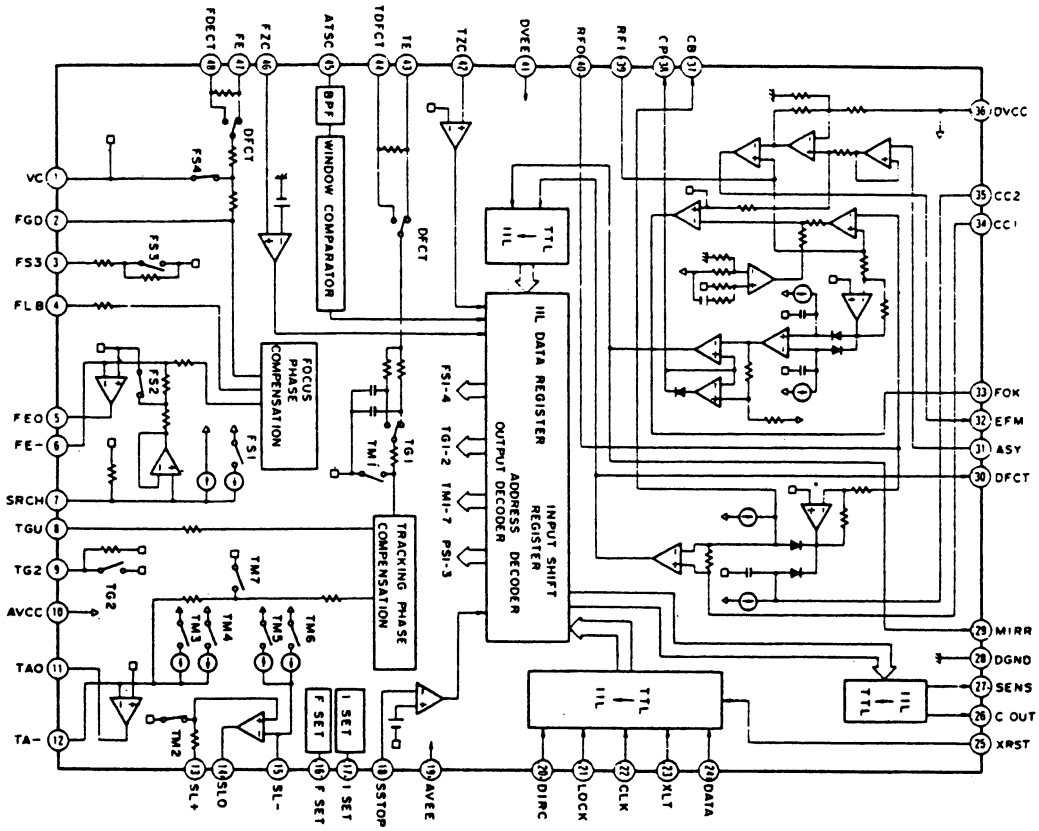
M51943ASL (System reset)



74HCU04P (Hex inverters)



CXA1372Q (Servo Signal Processor)



PIN NO.	SYMBOL	I/O	DESCIRPION
1	VC	I	Mid-point voltage input terminal.
2	FGD	I	Connect the capacitor between FS3 and this pin when the high frequency gain focus servo is dropped.
3	FS3	I	Focus servo high frequency gain changeover input terminal.
4	FLB	I	Input terminal for the low frequency boost of focus servo.
5	FEO	O	Focus drive output terminal.
6	FE-	I	Inversion input terminal of focus amplifier.
7	SRCH	I	Time constant terminal to make the focus search waveform.
8	TGU	I	Tracking high frequency changeover input terminal.
11	TAO	O	Tracking drive output terminal.
12	TA-	I	Inversion input terminal of tracking amplifier.
13	SL+	I	No-inversion input terminal of sled amplifier.
14	SLO	O	Sled drive output terminal.
15	SL-	I	Inversion input terminal of sled amplifier.
16	FSET	I	Peak setting input of phase correction of focus tracking.
17	ISET	I	This terminal is flowed the current so that the focus search,tarcking jump,and sled kick height is decided.
18	SSTOP	I	Inner switch selection input terminal.
20	DIRC	I	This terminal is used when track jump.
21	LOCK	I	The sled runaway prevention circuit operates at the low level.
22	CLK	I	Serial data transfer clock input from microprocessor.

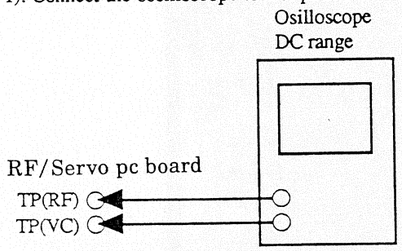
PIN NO.	SYMBOL	I/O	DESCIRPION
23	XLT	I	Latch input terminal for microprocessor.
24	DATA	I	Serial data input terminal for microprocessor.
25	XRST	I	Reset input terminal.Active low.
26	C.OUT	O	Signal output to count the track numbers.
27	SENS	O	This terminal outputs FZC,and SSTOP to according command from the microprocessor.
29	MIRR	O	Mirror comparator output terminal.
30	DFCT	O	Defect comparator output terminal.
31	ASY	I	Auto asymmetry control input terminal.
32	EFM	O	EFM comparator output terminal.
33	FOK	O	Focus OK comparator output terminal.
34	CC1	O	Defect bottom hold output terminal.
35	CC2	I	Defect bottom hold input terminal from CC1.
37	CB	I	Defect bottom hold capacitor connection terminal.
38	CP	I	Mirror hold capacitor connection terminal.
39	RFI	I	RF summing amplifier input terminal.
40	RFO	O	RF summing amplifier output terminal.
42	TZC	I	Tracking zero-cross comparator input terminal.
43	TE	I	Tracking error input terminal.
44	TDFCT	I	Capacitor connection terminal for time constant when defect.
45	ATSC	I	Window comparator input terminal for ATSC detection.
46	FZC	I	Focos zero-cross comparator input terminal.
47	FE	I	Focus error input terminal.
48	FDFCT	I	Capacitor connection terminal for time constant when defect.

ADJUSTMENT PROCEDURES

It is not necessary to perform the adjustment of optical pickup.

This confirmation should be made when replacing the optical pickup.

1). Connect the oscilloscope to test points RF and VC.



2). Turn the power switch on.

3). Load the test disc YEDS-18 on the tray and press the play button.

4). Confirm that the waveform on the oscilloscope is optimum eye pattern and optimum level as shown photo 1.

Optimum eye pattern means that shape "◇" can be clearly distinguished at the center of the waveform.

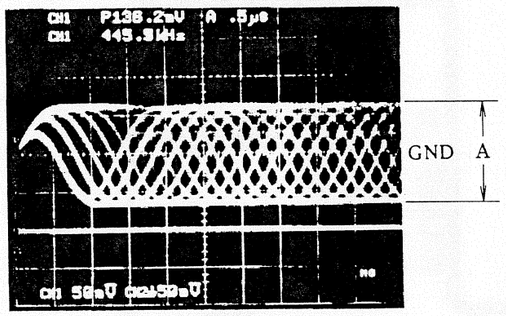


Photo 1

A=1.2±0.3Vp-p

REFERENCE

Focus/Tracking Gain Adjustment

A frequency response analyzer is necessary in order to perform this adjustment exactly.

However, this gain has a margin, so even if it is slightly off, there is no problem. Therefore, do not perform this adjustment.

Focus/tracking gain determines the pick-up follow-up (vertical and horizontal) relative to mechanical noise and mechanical shock when the 2-axis device operate.

However, as these reciprocate, the adjustment is at the point where both are satisfied.

- When gain is raised, the noise when the 2-axis device operates increases.
- When gain is lowered, it is more susceptible to mechanical shock and skipping occurs more easily.
- When gain adjustment is off, the symptoms below appear.

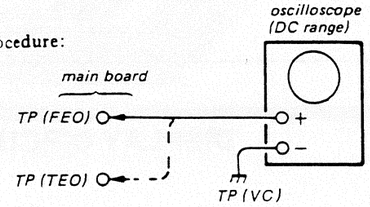
Symptoms \ Gain	Focus	Tracking
• The time until music starts becomes longer for STOP →▷PLAY or automatic selection (⏮ ⏭buttons pressed. (Normally takes about 2 seconds.)	low	low or high
• Music does not start and disc continues to rotate for STOP→▷PLAY or automatic selection (⏮ ⏭ buttons pressed.)	–	low
• Sound is interrupted during PLAY. Or time counter display stops progressing.	–	low
• More poise during 2-axis device operation.	high	high

The following is a simple adjustment method.

– Simple Adjustment –

Note: Since exact adjustment cannot be performed, remember the positions of the controls before performing the adjustment. If the positions after the simple adjustment are only a little different, return the controls to the original position.

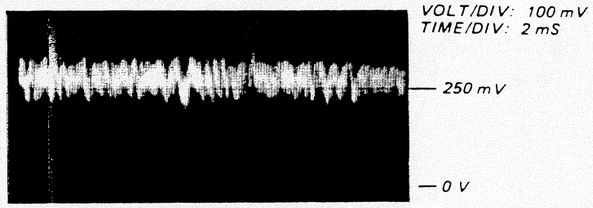
Procedure:



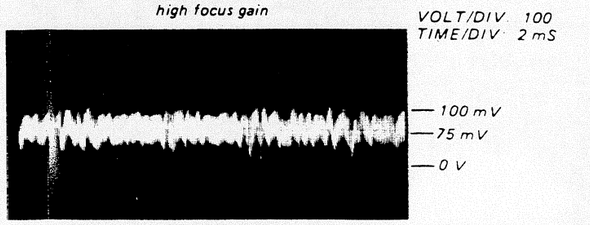
1. Keep the set horizontal.
   (If the set is not horizontal, this adjustment cannot be performed due to the gravity against the 2 axis device.)
2. Insert disc (YEDS-18) and press ▷PLAY button.
3. Connect oscilloscope to RF/Servo board TP (FE).
4. Adjust RV102 so that the waveform is as shown in the figure below. (focus gain adjustment)

- Incorrent Examples (DC level changes more than on adjusted waveform)

low focus gain



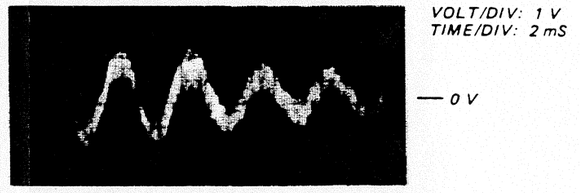
high focus gain



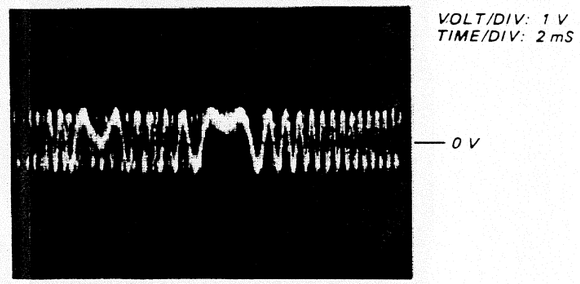
5. Connect oscilloscope to RF/Servo board TP (TE).
6. Adjust RV101 so that the waveform is as shown in the figure below. (tracking gain adjustment)

- Incorrect Examples (fundamental wave appears)

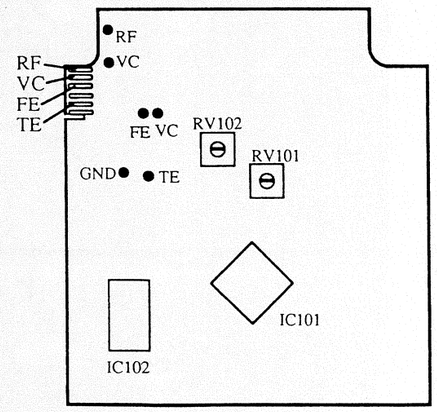
low tracking gain



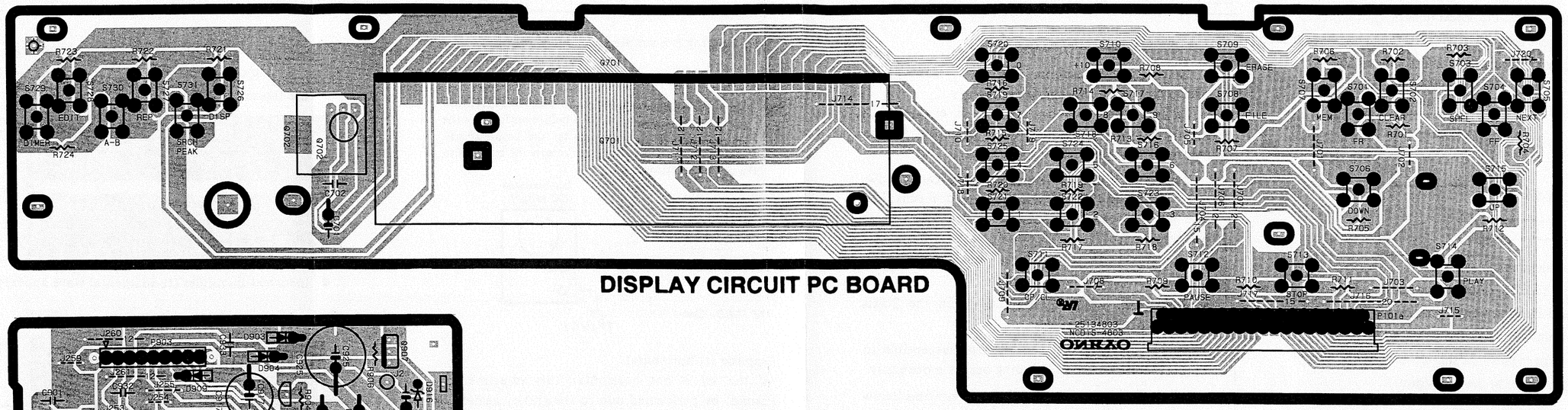
high tracking gain
(higher fundamental wave than for low gain)



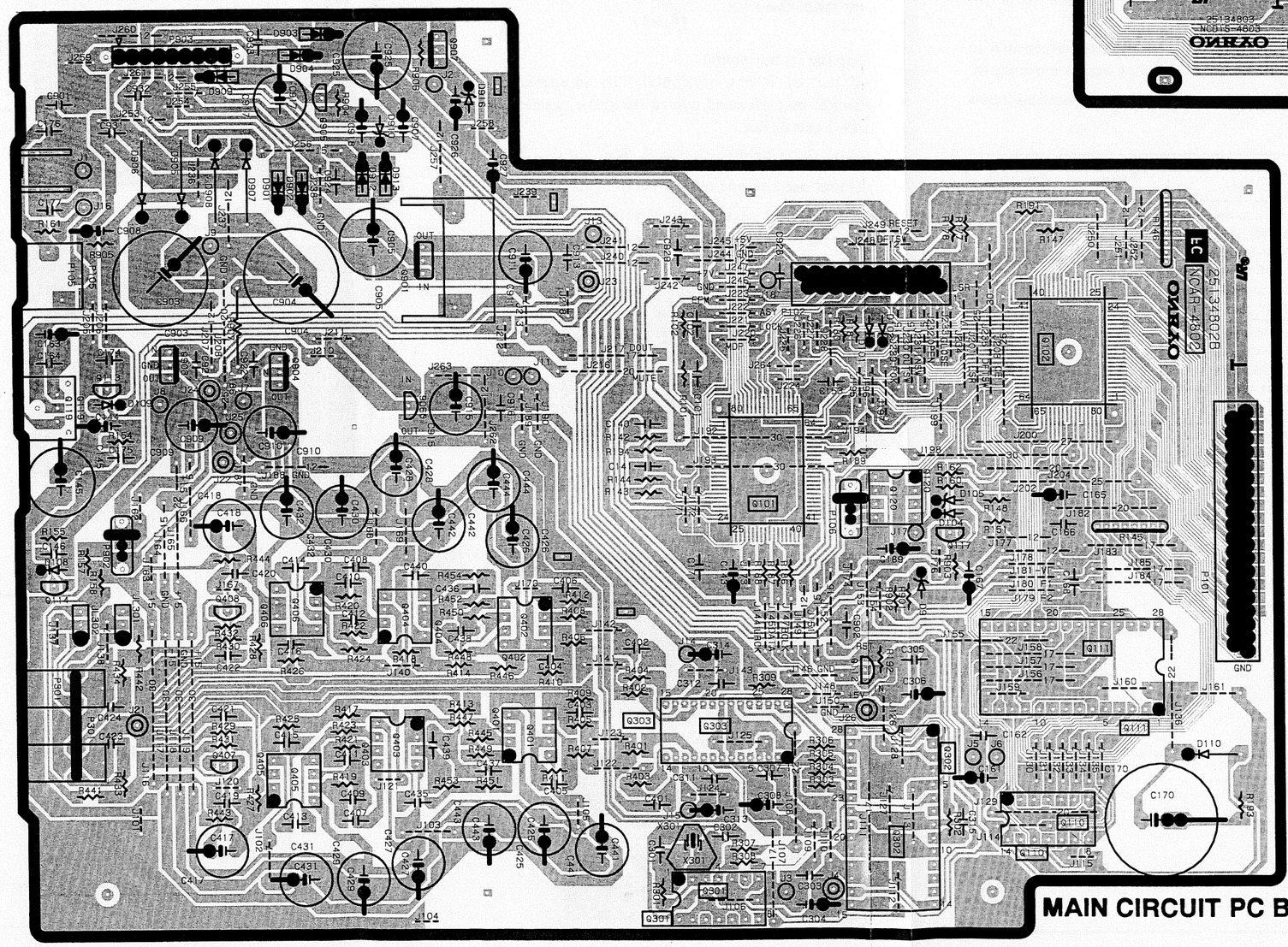
Adjustment Location: RF/Servo board



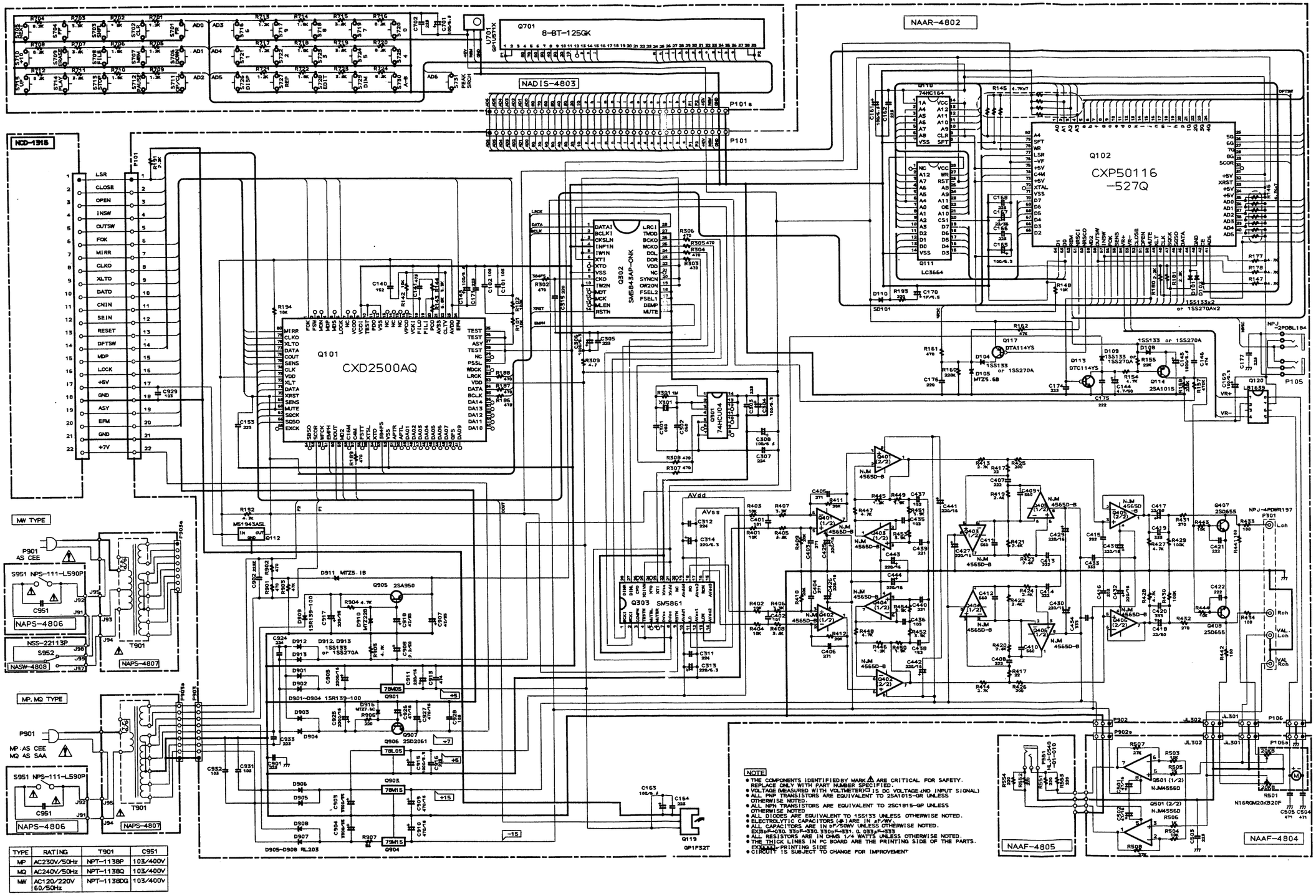
PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



DISPLAY CIRCUIT PC BOARD



SCHEMATIC DIAGRAM



TYPE	RATING	T901	C951
MP	AC230V/50Hz	NPT-1138P	103/400V
MQ	AC240V/50Hz	NPT-1138Q	103/400V
MW	AC120/220V 60/50Hz	NPT-1138DG	103/400V

PRINTED CIRCUIT BOARD – PARTS LIST

MAIN CIRCUIT PC BOARD(NAAR-4802-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q101	22240487 or	CXD2500AQ or
	22240487A	CXD2500BQ
Q102	22240725	CXP50116-527Q
Q110	222741645	74HC164
Q111	22240198,	LC3664NL-12,
	22240754 or	LC3664AL-12 or
	22240755	LC3664RL-12,
Q112	22240018	M51943ASL
Q120	22240322	LB1639
Q301	222755	74HC04P
Q302	22240680A	SM5843AP-ONK
Q303	22240520	SM5861AP
Q401-Q406	22240201	NJM4565D-B
Q901	222780055MIT	M5F78M05L
Q903	222780155MIT	M5F78M15L
Q904	222790155MIT	M5F79M15L
Q906	222780053	78L05
	Transistors	
Q113	221281	DTC114YS
Q114	2211455	2SA1015-GR
Q117	2213090	DTA114YS
Q407,Q408	2211706	2SD655-F
Q905	2211503 or	2SA950-O or
	2211504	2SA950-Y
Q907	2202115 or	2SD2061-E or
	2202116	2SD2061-F
	Opto.module	
Q119	24120038	GP1F32T
	Diodes	
D101-D104	223163 or	1SS133 or
D108,D109	223205	1SS270A
D105	224450562	MTZ5.6B
D110	223191	SD101
D901-D904	22380032	1SR139-100
D905-D908	22380045	RL203
D909	22380032	1SR139-100
D910	224452202	MTZ22B
D911	224450512	MTZ5.1B
D912,D913	22380032	1SR139-100
D916	224450753	MTZ7.5C
	X'tal	
X301	3010159	AT-38-169
	Capacitors	
C101,C102	374721034	0.01 μF±5%,50V,Plastic
C140	374721524	1500pF±5%,50V,Plastic
C141	374724734	0.047 μF±5%,50V,Plastic
C143	354721019	100 μF,6.3V,Elect.
C144	354780479	4.7 μF,50V,Elect.
C145,C306	354721029	1000 μF,6.3V,Elect.

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
C146	374724744	0.47 μF±5%,50V,Plastic
C161,C163	354721019	100 μF,6.3V,Elect.
C165,C169	354721019	100 μF,6.3V,Elect.
C167	354762209	22 μF,35V,Elect.
C170	3000073 or	1F, 5.5V, Super
	3000058	
C175	374722224	2200pF±5%,50V,Plastic
C304,C308	354721019	100 μF,6.3V,Elect.
C307	374722244	0.22 μF±5%,50V,Plastic
C311,C312	374722244	0.22 μF±5%,50V,Plastic
C313,C314	354722219	220 μF,6.3V,Elect.
C401,C402	373301014	100pF±5%,125V,Plastic
C403-C406	373302714	270pF±5%,125V,Plastic
C407,C408	374722224	2200pF±5%,50V,Plastic
C413,C414	374722224	2200pF±5%,50V,Plastic
C415,C416	374722024	2000pF±5%,50V,Plastic
C417,C418	354780229	22 μF,50V,Elect.
C419,C420	374723334	0.033 μF±5%,50V,Plastic
C421,C422	374722224	2200pF±5%,50V,Plastic
C425-C427	354742219	220 μF,16V,Elect.
C429-C432	354742219	220 μF,16V,Elect.
C435,C436	374721034	0.01 μF±5%,50V,Plastic
C437,C438	374721524	1500pF±5%,50V,Plastic
C439,C440	373302214	220pF±5%,125V,PP
C441-C444	354742219	220 μF,16V,Elect.
C903,C904	393163327	3300 μF,35V,Elect.
C905,C925	354742229	2200 μF,16V,Elect.
C907	354764709	47 μF,35V,Elect.
C908	354780229	2.2 μF,50V,Elect.
C909,C910	354744719	470 μF,16V,Elect.
C911	354742219	220 μF,16V,Elect.
C913	375524744	0.47 μF±5%,50V,Plastic
C915	354721029	1000 μF,6.3V,Elect.
C917	354762219	220 μF,35V,Elect.
C918	354764709	47 μF,35V,Elect.
C925	354742229	2200 μF,16V,Elect.
C926	354744709	47 μF,16V,Elect.
C927	354744719	470 μF,16V,Elect.
C928,C929	374721034	0.01 μF±5%,50V,Plastic
C931,C932	374721034	0.01 μF±5%,50V,Plastic
C933	374722234	0.022 μF±5%,50V,Plastic
	Resistors	
R145,R146	49163472407	4.7k×7,1/10W,Array
R907	441625604	56Ω,1W,Metal
	Sockets	
P101	25050977	NSCT-37P764
P102	25050962	NSCT-22P749
	Jack	
P105	25045330	NPJ-2PDBL184

CIRCUIT NO.	PART NO.	DESCRIPTION
	Terminal	
P301	25045351	NPJ-4PDWR197,Output
	Holder	
	27190751	

DISPLAY CIRCUIT PC BOARD(NADIS-4803-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
Q701	212109	8-BT-125GK,FL tube
Q702	24130007	GP1U571X,Remote control sensor
S701-S731	25035548	NPS-111-S510,Push switches
C701	353721019	100 μF,6.3V,Elect. capacitor
	27190754A	Holder FL
P101A	25050943	NSCT-37P730,Socket

HEADPHONE AMPLIFIER PC BOARD(NAAF-4804-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
Q501	222654	NJM4556D,IC
C501,C502	354744709	47 μF,16V,Elect. capacitors
R501	5104327	N16RGM20KB20F,
		Variable resistor

HEADPHONE TERMINAL PC BOARD(NAAF-4805-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
P551	25045139	HLJ-0540-01-010,
		Headphone jack

POWER SWITCH PC BOARD(NAPS-4806-1/1A)

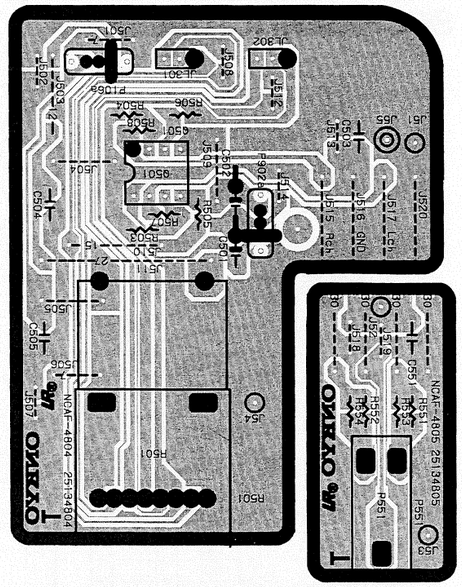
CIRCUIT NO.	PART NO.	DESCRIPTION
C951	3500065A	⚠ DE7150FZ103PAC400V/
		125V,IS capacitor
S951	25035636	⚠ NPS-111-S590P,
		Power switch

VOLTAGE SELECTOR SWITCH PC BOARD(NASW-4808-1)

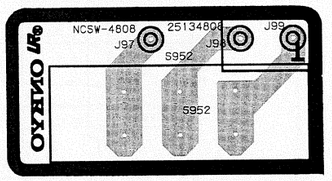
Worldwide model only

CIRCUIT NO.	PART NO.	DESCRIPTION
S952	25065287	⚠ NSS-22113P,Slide switch

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.



HEADPHONE PC BOARDS



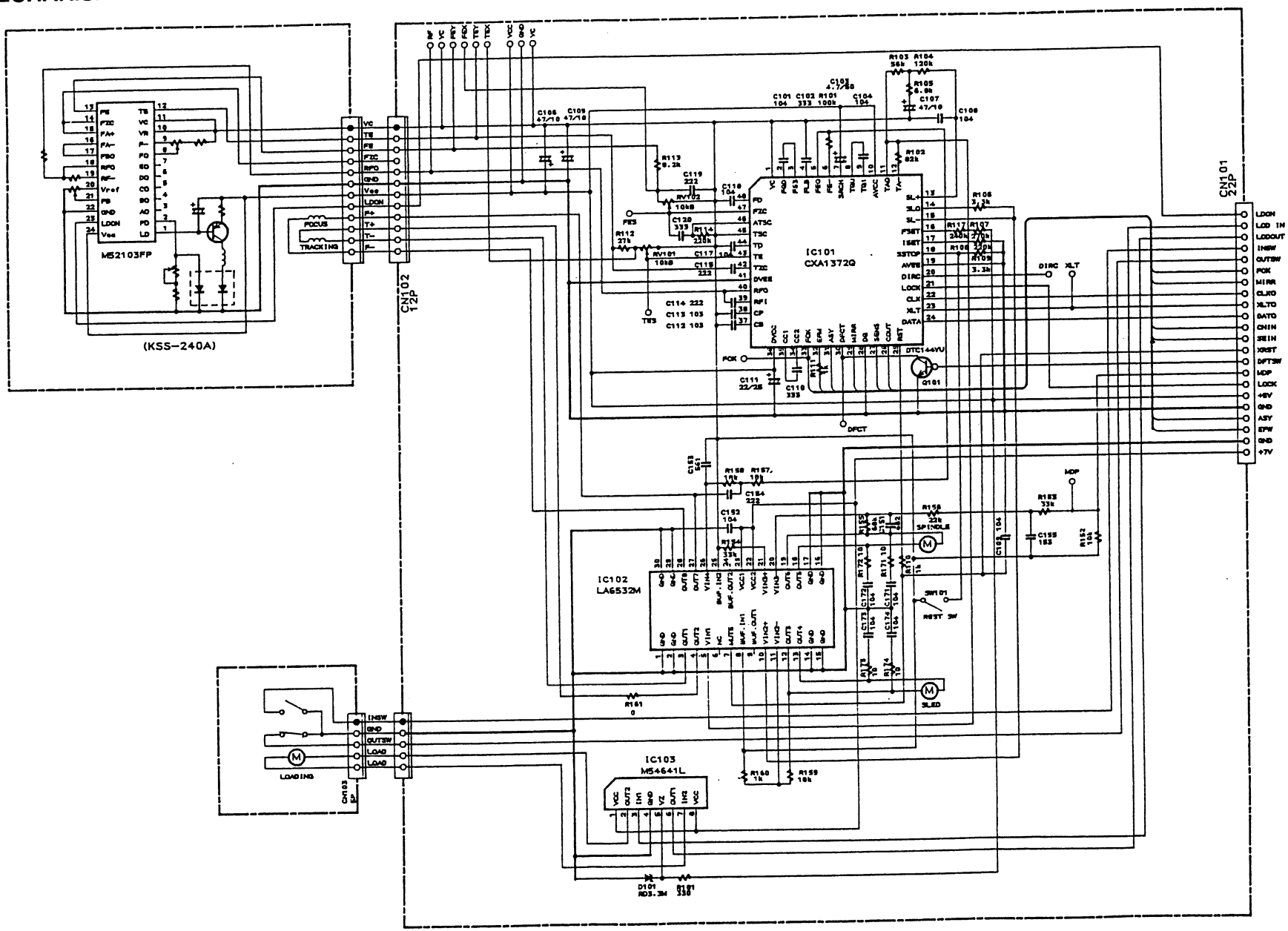
VOLTAGE SELECTOR SWITCH PC BOARD

MECHANISM PC BOARD

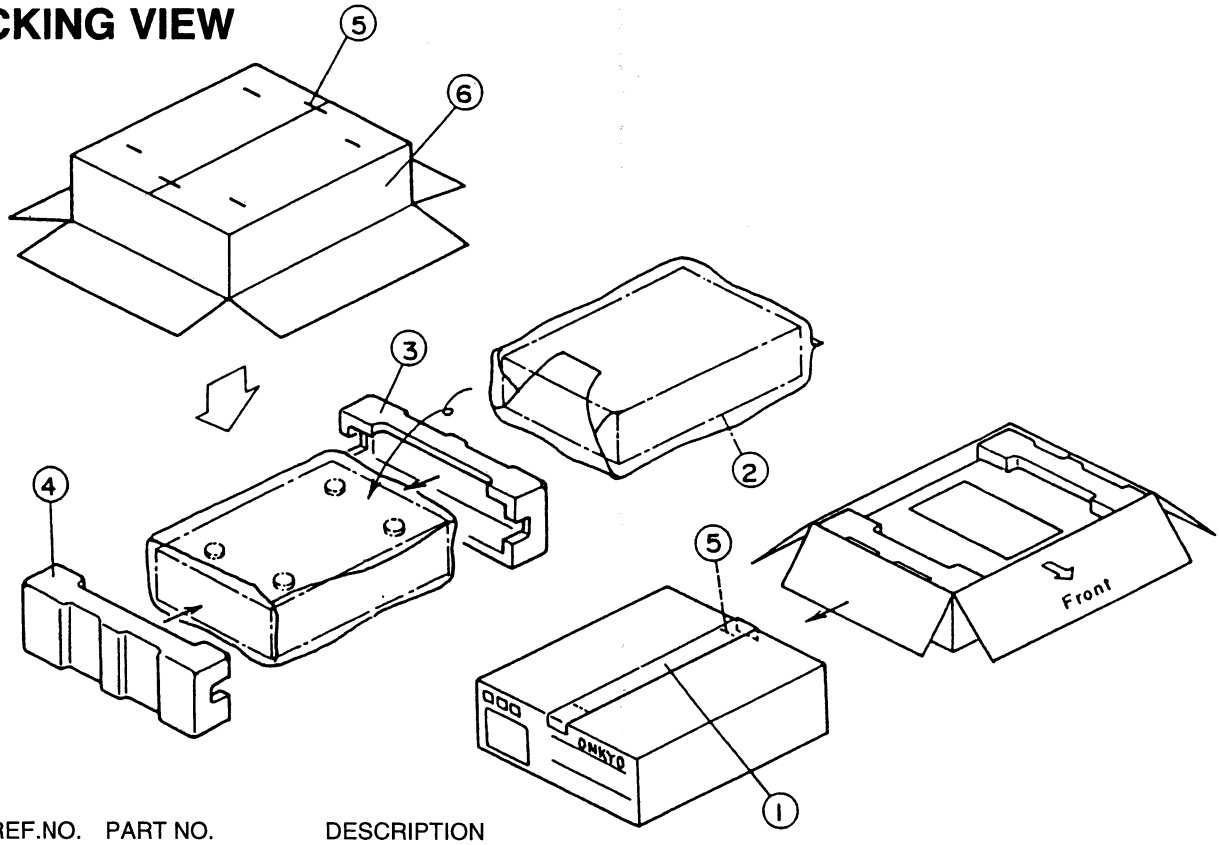
CIRCUIT NO.	PART NO.	DESCRIPTION
IC101	24840089	CXA1372AQ,IC
IC102	22240551	LA6532M-T1,IC
IC103	22240101	M54641L,IC
RV101,102	24840085	10K,Trim resistor
SW101	24840070	Leafswitch
CN101	24840072	Connector pin
CN102	24840071	Connector socket

SCHEMATIC DIAGRAM

MECHANISM BLOCK



PACKING VIEW



REF.NO.	PART NO.	DESCRIPTION
1	29110071	50 × 60cm,PP tape
2	29100037-1Y	650 × 500mm,Styrene bag
3	29091637-1AY	Pad R
4	29091636-1AY	Pad L
5	282321	Staple
6	29052841Y	Master carton box
	Accessary bag ass'y	
	2010244Y	Connection cable
	2010200	Connection cable for remote control
	24140278Y	RC-278C,Remote control transmitter
	3010054	UM-3,Two batteries
	29342067Y	Instruction manual,E
	29342068Y	Instruction manual,V <P>
	29342069Y	Instruction manual,U6
	29342070Y	Instruction manual,U3 <W>
	29100097-1	350 × 250mm,Styrene bag
	25055040	CV-K-2,Conversion plug <W>
	29365020L	Warranty card,V
	29100094B	Styrene bag,for Warranty caard
	29355221	Instruction sheet <GK>

NOTE: <P>:230V model only
<W>:Worldwide model only
<GK>:Korea model only

ONKYO CORPORATION

Sales Planning & Promotion Dept.: 2-1, Nisshin-cho, Neyagawa-shi, OSAKA 572, JAPAN
Tel: 0720-31-8133 Fax: 0720-34-1340

ONKYO U.S.A CORPORATION
200 Williams Drive, Ramsey, N.J. 07446, U.S.A.
Tel: 201-825-7950 Fax: 201-825-8150

ONKYO DEUTSCHLAND GMBH ELECTRONICS
Industriestrasse 18-20, D-82110 Germering, GERMANY
Tel: 089 84 93 20 Fax: 089 84 93 226

ONKYO FRANCE
Immeuble Le Diamant, Domaine Technologique de Saclay, 4 Rue René Razel,
91892 SACLAY, FRANCE Tel: (1) 69 33 14 00 Fax: (1) 69 41 35 84

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